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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CHORBAJI, MONZER R	

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1797	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/530,361	MORUZZI, GUIDO	
	Examiner	Art Unit	
	MONZER R. CHORBAJI	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 August 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-6,15,17,18 and 21-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-6,15,17,18 and 21-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 April 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This non-final action is in response to the arguments presented on 08/14/2007

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 15, 17, 26 and 29-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Kodera (U.S.P.N. 4,396,582).

Regarding claim 15, Kodera discloses an apparatus for sterilizing a packaging material (figure 5:P) that includes the following: a means (figure 5:14 and 16) that is capable of applying a hydrogen peroxide solution to a surface of a packaging material, connected in sequence (figure 5:28, 30 and 32) to a means for directing a stream of air (figure 5:82) on the surface of the packaging material that is capable of removing substantially all but a residual or trace quantity of hydrogen peroxide, connected in sequence (figure 5:32 and 126) to a means for irradiating (figure 5:20) the packaging material with UV light that is capable of emitting a UV wavelength between 200nm and 320nm, and a means for advancing the packaging material (figure 5:28, 30, 32 and 126) continuously and sequentially from the applying means through the means for directing a stream of air and then to the irradiating means; wherein the means for applying hydrogen peroxide includes a bath (figure 5:14).

Regarding claim 26, Kodera discloses an apparatus for sterilizing a packaging material (figure 5:P) that includes the following: a means (figure 5:14 and 16) that is capable of applying a

hydrogen peroxide solution to a surface of a packaging material, connected in sequence (figure 5:28, 30 and 32) to a means for directing a stream of air (figure 5:82) on the surface of the packaging material that is capable of removing substantially all but a residual or trace quantity of the hydrogen peroxide that has been absorbed by or located adjacent to any microorganisms (Aspergillus nigers that were sprayed on the laminated food packaging film as explained in col.3, lines 45-49) present on the packaging material, connected in sequence (figure 5:32 and 126) to a means for irradiating (figure 5:20) the packaging material with UV light that is capable of emitting a UV wavelength between 200 nm and 320 nm, and a means for advancing the packaging material (figure 5:28, 30, 32 and 126) continuously and sequentially from the means for applying a hydrogen peroxide solution, through the means for directing a stream of air, and thereafter through the means for irradiating the packaging material.

Regarding claim 29, Kodera discloses an apparatus for sterilizing packaging material (figure 5:P) that includes a packaging material transport mechanism (figure 5: 28, 30, 32 and 126) arranged to transport the packaging material in sequence through a bath (figure 5:14) that is capable of holding a hydrogen peroxide solution, past an air knife (figure 5:82) that is capable of substantially removing the hydrogen peroxide solution from the packaging material and thereafter past a UV light source (figure 5:20).

Regarding claim 17, Kodera discloses means for irradiating the packaging sheet material (figure 5:P and 20) with UV light lamps that are capable of emitting UV light having a wavelength of about 222 nm and are also capable of emitting UV light having a wavelength of between about 200nm and 320nm.

Regarding claims 30-31, Kodera discloses UV light lamps (figure 5:20) that are capable of emitting UV light having a wavelength between about 200 nm and 320 nm and UV light lamps (figure 5:20) that are capable of emitting UV light having a wavelength of about 222 nm.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 15, 26 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodera (U.S.P.N. 4,396,582) in view of Bachmann et al (U.S.P.N. 4,175,140).

Regarding claim 15, Kodera discloses an apparatus for sterilizing a packaging material (figure 5:P) that includes the following: a means (figure 5:14 and 16) that is capable of applying a hydrogen peroxide solution to a surface of a packaging material, connected in sequence (figure 5:28, 30 and 32) to a means for directing a stream of air (figure 5:82) on the surface of the packaging material that is capable of removing substantially all but a residual or trace quantity of

hydrogen peroxide, connected in sequence (figure 5:32 and 126) to a means for irradiating (figure 5:20) the packaging material with UV light, and a means for advancing the packaging material (figure 5:28, 30, 32 and 126) continuously and sequentially from the applying means through the means for directing a stream of air and then to the irradiating means; wherein the means for applying hydrogen peroxide includes a bath (figure 5:14). As to the limitation of emitting UV light at a wavelength range between 200nm and 320nm, Kodera is silent to the claimed UV range. Bachmann sterilizes packaging material (col.2, lines 28-31) with UV light having intensity of 253.7 nm (col.2, lines 41-42) since at such intensity UV light various sporogenetic or non-sporogentic bacteria undergo high reduction rates (col.6, lines 35-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the apparatus in Kodera with a UV light intensity of 253.7 nm since at such intensity UV light various sporogenetic or non-sporogentic bacteria undergo high reduction rates as explained by Bachmann (col.6, lines 35-40).

Regarding claim 26, Kodera discloses an apparatus for sterilizing a packaging material (figure 5:P) that includes the following: a means (figure 5:14 and 16) that is capable of applying a hydrogen peroxide solution to a surface of a packaging material, connected in sequence (figure 5:28, 30 and 32) to a means for directing a stream of air (figure 5:82) on the surface of the packaging material that is capable of removing substantially all but a residual or trace quantity of the hydrogen peroxide that has been absorbed by or located adjacent to any microorganisms (Aspergillus nigers that were sprayed on the laminated food packaging film as explained in col.3, lines 45-49) present on the packaging material, connected in sequence (figure 5:32 and 126) to a means for irradiating (figure 5:20) the packaging material with UV light, and a means for

advancing the packaging material (figure 5:28, 30, 32 and 126) continuously and sequentially from the means for applying a hydrogen peroxide solution, through the means for directing a stream of air, and thereafter through the means for irradiating the packaging material. As to the limitation of emitting UV light at a wavelength range between 200nm and 320nm, Kodera is silent to the claimed UV range. Bachmann sterilizes packaging material (col.2, lines 28-31) with UV light having intensity of 253.7 nm (col.2, lines 41-42) since at such intensity UV light various sporogenetic or non-sporogentic bacteria undergo high reduction rates (col.6, lines 35-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the apparatus in Kodera with a UV light intensity of 253.7 nm since at such intensity UV light various sporogenetic or non-sporogentic bacteria undergo high reduction rates as explained by Bachmann (col.6, lines 35-40).

Regarding claim 30, Kodera discloses providing UV light lamps (figure 5:20). As to the limitation of emitting UV light at a wavelength range between 200nm and 320nm, Kodera is silent to the claimed UV range. Bachmann sterilizes packaging material (col.2, lines 28-31) with UV light having intensity of 253.7 nm (col.2, lines 41-42) since at such intensity UV light various sporogenetic or non-sporogentic bacteria undergo high reduction rates (col.6, lines 35-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the apparatus in Kodera with a UV light intensity of 253.7 nm since at such intensity UV light various sporogenetic or non-sporogentic bacteria undergo high reduction rates as explained by Bachmann (col.6, lines 35-40).

6. Claims 17-18, 27 and 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodera (U.S.P.N. 4,396,582) in view of Bachmann et al (U.S.P.N. 4,175,140) as applied to claims 15, 26, 30 and further in view of Sizer et al (U.S.P.N. 5,843,374).

Regarding claims 17-18, 27 and 31-32, Kodera and Bachmann do not specifically teach irradiating UV light at about 222 nm and using excimer lamps. Sizer irradiates exterior surfaces of packaging material with an excimer lamp (col.3, lines 4-6 and lines 8-9) because excimer UV lamps provide uniform sterilization of the material (col.4, lines 9-10) and the use of KrCl excimer lamp emits a wavelength of 222 nm (col.7, lines 36-38). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the apparatus in Kodera with an excimer UV lamp because excimer UV lamps provide uniform sterilization of the material as shown by Sizer (col.4, lines 9-10).

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ernstsson et al (U.S.P.N. 3,884,012) in view of in view of Sizer et al (U.S.P.N. 5,843,374) and further in view of Loliger et al (U.S.P.N. 3,692,468).

Ernstsson discloses a method for sterilizing (col.1, lines 7-8) a packaging sheet material, the method including in the following order: applying a liquid solution of hydrogen peroxide to the surface of a packaging sheet material (col.4, lines 60-63 and figure 3:28 and 29); applying a stream of air to the packaging sheet material (col.5, lines 2-3 and figure 3:30) for removing a substantial amount of hydrogen peroxide from the surface of the packaging sheet material while retaining a residual or trace quantity of hydrogen peroxide (Ernstsson teaches removing surplus hydrogen peroxide by providing air knives as explained in col.5, lines 2-3 while hydrogen peroxide residues are left to be latter removed at an additional evaporation step as further shown

in col.5, line 1) absorbed by or located adjacent to any microorganisms present on the packaging sheet material (the specification only teaches of microorganisms without providing any significance and one of ordinary skill in the art would readily recognize that Ernstsson sterilizes the web material, because the surfaces of the material includes microorganisms that absorb the residual hydrogen peroxide left after the step of applying the air knives); and thereafter irradiating the surface of the packaging sheet material with UV light (col.3, lines 65-66 and figure 3:11) having undisclosed wavelength value; wherein applying hydrogen peroxide to the packaging sheet material includes immersing the packaging sheet material in a hydrogen peroxide bath (col.4, lines 60-63 and figure 3:28 and 29) at an undisclosed temperature value, for an undisclosed time interval. Ernstsson is silent with regard to teaching a UV light having a wavelength between about 200nm and 320nm and heating the hydrogen peroxide bath to a temperature between 15 degrees Centigrade and 80 degrees Centigrade, for a time interval of from 0.5 seconds to 2 seconds. Sizer irradiates the exterior surfaces of packaging material with KrCl excimer lamp (col.3, lines 4-6 and lines 8-9) at a wavelength of 222 nm (col.7, lines 36-38) in order to provide a uniform sterilization of the material (col.4, lines 9-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method in Kodera with the KrCl excimer UV lamp because KrCl excimer UV lamps provide uniform sterilization of the material as shown by Sizer (col.4, lines 9-10).

Sizer is silent with regard to teaching of heating the hydrogen peroxide bath to a temperature between 15 degrees Centigrade and 80 degrees Centigrade, for a time interval of from 0.5 seconds to 2 seconds. Loliger sterilizes the surfaces of contaminated strip material by immersing it in a hydrogen peroxide bath heated to a temperature of 60 degrees Centigrade

(col.2, lines 68-70, figure 1:15 and 10), because it is known at such a temperature kills even heat-resisting germs (col.1, lines 31-33). As to the limitation of immersing the packaging sheet material for a time interval of from 0.5 seconds to 2 seconds, Loliger recognizes that long immersion time of the packaging material in the liquid hydrogen peroxide is detrimental to the material (col.4, lines 9-13). Specifically, Loliger provides an example of a time interval of 7 seconds at an exemplary speed where the strip moving at speed of 30 cm/second (col.3, lines 56-60). Loliger teaches that the depth of the immersion is lessened in the presence of highly heated and highly concentrated hydrogen peroxide solution (col.4, lines 19-21) such that one of ordinary skill in the art would readily recognize that as the temperature and concentration of hydrogen peroxide change so does the immersion time. The disclosure as a whole does not provide any critical showing to the claimed immersion time interval and absent any evidence of criticality, decreasing or increasing the immersion time of the packaging material in the liquid hydrogen peroxide is a matter of routine experimentation. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method in Kodera with the heated hydrogen peroxide solution, because it is known that hydrogen peroxide solution heated to a 60 degrees Centigrade temperature kills even heat-resisting germs as shown by Loliger (col.1, lines 31-33).

8. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ernstsson et al (U.S.P.N. 3,884,012) in view of in view of Sizer et al (U.S.P.N. 5,843,374) and further in view of Loliger et al (U.S.P.N. 3,692,468) and DiGeronimo (U.S.P.N. 4,494,357).

Ernstsson discloses a method for sterilizing (col.1, lines 7-8) a packaging sheet material including, in the following order: applying a liquid solution of hydrogen peroxide to the surface of

a packaging sheet material (col.4, lines 60-63 and figure 3:28 and 29) while any microorganisms on the surface of the packaging material absorb hydrogen peroxide (the specification only teaches of microorganisms without providing any significance and one of ordinary skill in the art would readily recognize that Ernstsson sterilizes the web material, because the surfaces of the material includes microorganisms that absorb the residual hydrogen peroxide left after the step of applying the air knives); then applying a stream of air to the packaging sheet material (col.5, lines 2-3 and figure 3:30) for removing a substantial amount of hydrogen peroxide from the surface of the packaging sheet material while retaining a residual or trace quantity of hydrogen peroxide (Ernstsson teaches removing surplus hydrogen peroxide by providing air knives as explained in col.5, lines 2-3 while hydrogen peroxide residues are left to be latter removed at an additional evaporation step as further shown in col.5, line 1) absorbed by or located adjacent to any microorganisms present on the packaging sheet material(the specification only teaches of microorganisms without providing any significance and one of ordinary skill in the art would readily recognize that Ernstsson sterilizes the web material, because the surfaces of the material includes microorganisms that absorb the residual hydrogen peroxide left after the step of applying the air knives); and thereafter irradiating the surface of the packaging sheet material with UV light (col.3, lines 65-66 and figure 3:11) having an undisclosed wavelength value; wherein applying hydrogen peroxide to the packaging sheet material includes immersing the packaging sheet material in a hydrogen peroxide bath (col.4, lines 60-63 and figure 3:28 and 29) at an undisclosed temperature value, for an undisclosed time interval; wherein removing a substantial amount of hydrogen peroxide from the packaging sheet material includes blowing a stream of air at an undisclosed temperature onto the packaging sheet material; and wherein the

packaging sheet material is hydrophobic (col.5, lines 46-62). Ernstsson is silent with regard to teaching the following: irradiating with a UV light having a wavelength between about 200nm and 320nm, heating the hydrogen peroxide bath to a temperature between 15 degrees Centigrade and 80 degrees Centigrade, for a time interval of from 0.5 seconds to 2 seconds and blowing a stream of air heated to a temperature from 80 degrees Centigrade to 150 degrees Centigrade onto the packaging sheet material. Sizer irradiates the exterior surfaces of packaging material with KrCl excimer lamp (col.3, lines 4-6 and lines 8-9) at a wavelength of 222 nm (col.7, lines 36-38) in order to provide a uniform sterilization of the material (col.4, lines 9-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method in Kodera with the KrCl excimer UV lamp because KrCl excimer UV lamps provide uniform sterilization of the material as shown by Sizer (col.4, lines 9-10).

Sizer is silent with regard to teaching heating the hydrogen peroxide bath to a temperature between 15 degrees Centigrade and 80 degrees Centigrade, for a time interval of from 0.5 seconds to 2 seconds and blowing a stream of air heated to a temperature from 80 degrees Centigrade to 150 degrees Centigrade onto the packaging sheet material. Loliger sterilizes the surfaces of contaminated strip material by immersing it in a hydrogen peroxide bath heated to a temperature of 60 degrees Centigrade (col.2, lines 68-70, figure 1:15 and 10), because it is known at such a temperature kills even heat-resisting germs (col.1, lines 31-33). As to the limitation of immersing the packaging sheet material for a time interval of from 0.5 seconds to 2 seconds, Loliger recognizes that long immersion time of the packaging material in the liquid hydrogen peroxide is detrimental to the material (col.4, lines 9-13). Specifically, Loliger provides an example of a time interval of 7 seconds at an exemplary speed where the strip moving at

speed of 30 cm/second (col.3, lines 56-60). Loliger teaches that the depth of the immersion is lessened in the presence of highly heated and highly concentrated hydrogen peroxide solution (col.4, lines 19-21) such that one of ordinary skill in the art would readily recognize that as the temperature and concentration of hydrogen peroxide change so does the immersion time. The disclosure as a whole does not provide any critical showing to the claimed immersion time interval and absent any evidence of criticality, decreasing or increasing the immersion time of the packaging material in the liquid hydrogen peroxide is a matter of routine experimentation. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method in Kodera with the heated hydrogen peroxide solution, because it is known that hydrogen peroxide solution heated to a 60 degrees Centigrade temperature kills even heat-resisting germs as shown by Loliger (col.1, lines 31-33).

Loliger is silent with regard to blowing a stream of air heated to a temperature from 80 degrees Centigrade to 150 degrees Centigrade onto the packaging sheet material. DiGeronimo sterilizes packaging material (col.1, lines 8-10) by immersing the material in a 30% hydrogen peroxide solution, followed by a hot air application step where the air is heated to a temperature from 150 degrees Centigrade to 155 degrees Centigrade (col.3, lines 11-15), because combining hydrogen peroxide with heat results in a greater log reduction in viable cells (col.4, lines 30-33). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method in Ernstsson with the heated air, because combining hydrogen peroxide with heat results in a greater log reduction in viable cells as explained by DiGeronimo (col.4, lines 30-33).

9. Claims 5 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ernstsson et al (U.S.P.N. 3,884,012) in view of in view of Sizer et al (U.S.P.N. 5,843,374) and further in view of DiGeronimo (U.S.P.N. 4,494,357).

Regarding claim 5, Ernstsson discloses a method for sterilizing (col.1, lines 7-8) a packaging sheet material, the method including in the following order: applying a liquid solution of hydrogen peroxide to the surface of a packaging sheet material (col.4, lines 60-63 and figure 3:28 and 29) while any microorganisms on the surface of the packaging material absorb hydrogen peroxide (the specification only teaches of microorganisms without providing any significance and one of ordinary skill in the art would readily recognize that Ernstsson sterilizes the web material, because the surfaces of the material includes microorganisms that absorb the residual hydrogen peroxide left after the step of applying the air knives); applying a stream of air to the packaging sheet material (col.5, lines 2-3 and figure 3:30) for removing a substantial amount of hydrogen peroxide from the surface of the packaging sheet material while retaining a residual or trace quantity of hydrogen peroxide (Ernstsson teaches removing surplus hydrogen peroxide by providing air knives as explained in col.5, lines 2-3 while hydrogen peroxide residues are left to be latter removed at an additional evaporation step as further shown in col.5, line 1) absorbed by or located adjacent to any microorganisms present on the packaging sheet material (the specification only teaches of microorganisms without providing any significance and one of ordinary skill in the art would readily recognize that Ernstsson sterilizes the web material, because the surfaces of the material includes microorganisms that absorb the residual hydrogen peroxide left after the step of applying the air knives); and irradiating the surface of the packaging sheet material with UV light (col.3, lines 65-66 and figure 3:11) having an undisclosed

wavelength value; wherein the stream of air is applied at an undisclosed temperature onto the packaging sheet material, and wherein the packaging sheet material is hydrophobic (col.5, lines 46-62). Ernstsson is silent with regard to teaching irradiating with a UV light having a wavelength between about 200nm and 320nm and heating the air to a temperature from 80 degrees Centigrade to 150 degrees Centigrade. Sizer irradiates the exterior surfaces of packaging material with KrCl excimer lamp (col.3, lines 4-6 and lines 8-9) at a wavelength of 222 nm (col.7, lines 36-38) in order to provide a uniform sterilization of the material (col.4, lines 9-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method in Kodera with the KrCl excimer UV lamp because KrCl excimer UV lamps provide uniform sterilization of the material as shown by Sizer (col.4, lines 9-10).

Sizer is silent with regard to heating the air to a temperature from 80 degrees Centigrade to 150 degrees Centigrade. DiGeronimo sterilizes packaging material (col.1, lines 8-10) by immersing the material in a 30% hydrogen peroxide solution, followed by a hot air application step where the air is heated to a temperature from 150 degrees Centigrade to 155 degrees Centigrade (col.3, lines 11-15), because combining hydrogen peroxide with heat results in a greater log reduction in viable cells (col.4, lines 30-33). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method in Ernstsson with the heated air, because combining hydrogen peroxide with heat results in a greater log reduction in viable cells as explained by DiGeronimo (col.4, lines 30-33).

Regarding claim 25, Ernstsson teaches removing a substantial amount of hydrogen peroxide includes applying a stream of air to the surface of the packaging material (col.5, lines 2-3 and figure 3:30). However, Ernstsson and Sizer are silent with regard to heating the air to a

temperature from 80 degrees Centigrade to 150 degrees Centigrade. DiGeronimo sterilizes packaging material (col.1, lines 8-10) by immersing the material in a 30% hydrogen peroxide solution, followed by a hot air application step where the air is heated to a temperature from 150 degrees Centigrade to 155 degrees Centigrade (col.3, lines 11-15), because combining hydrogen peroxide with heat results in a greater log reduction in viable cells (col.4, lines 30-33). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method in Ernstsson with the heated air, because combining hydrogen peroxide with heat results in a greater log reduction in viable cells as explained by DiGeronimo (col.4, lines 30-33).

10. Claims 2-3, 21 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ernstsson et al (U.S.P.N. 3,884,012) in view of in view of Sizer et al (U.S.P.N. 5,843,374).

Regarding claim 21, Ernstsson teaches a method for sterilizing (col.1, lines 7-8) a packaging sheet material, the method including, in the following order: applying a liquid solution of hydrogen peroxide to the surface of a packaging material (col.4, lines 60-63 and figure 3:28 and 29) while any microorganisms on the surface of the packaging material absorb hydrogen peroxide (the specification only teaches of microorganisms without providing any significance and one of ordinary skill in the art would readily recognize that Ernstsson sterilizes the web material, because the surfaces of the material includes microorganisms that absorb the residual hydrogen peroxide left after the step of applying the air knives); applying a stream of air to the packaging sheet material (col.5, lines 2-3 and figure 3:30) for removing the hydrogen peroxide from the surface of the packaging sheet material while retaining a residual or trace quantity of hydrogen peroxide (Ernstsson teaches removing surplus hydrogen peroxide by providing air

knives as explained in col.5, lines 2-3 while hydrogen peroxide residues are left to be latter removed at an additional evaporation step as further shown in col.5, line 1) absorbed by or located adjacent to any microorganisms present on the packaging sheet material (the specification only teaches of microorganisms without providing any significance and one of ordinary skill in the art would readily recognize that Ernstsson sterilizes the web material, because the surfaces of the material includes microorganisms that absorb the residual hydrogen peroxide left after the step of applying the air knives); and irradiating the surface of the packaging material with UV light (col.3, lines 65-66 and figure 3:11) having an undisclosed wavelength value. Ernstsson is silent with regard to teaching irradiating with a UV light having a wavelength between about 200nm and 320nm. Sizer irradiates the exterior surfaces of packaging material with KrCl excimer lamp (col.3, lines 4-6 and lines 8-9) at a wavelength of 222 nm (col.7, lines 36-38) in order to provide a uniform sterilization of the material (col.4, lines 9-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method in Ernstsson with the KrCl excimer UV lamp because KrCl excimer UV lamps provide uniform sterilization of the material as shown by Sizer (col.4, lines 9-10).

Regarding claim 23, Ernstsson teaches a method for sterilizing (col.1, lines 7-8) packaging material including, in the following order: applying a hydrogen peroxide solution on the surface of a packaging material (col.4, lines 60-63 and figure 3:28 and 29) while any microorganisms on the surface absorb hydrogen peroxide (the specification only teaches of microorganisms without providing any significance and one of ordinary skill in the art would readily recognize that Ernstsson sterilizes the web material, because the surfaces of the

material includes microorganisms that absorb the residual hydrogen peroxide left after the step of applying the air knives); removing a substantial amount of hydrogen peroxide (col.5, lines 2-3 and figure 3:30) from the surface of the packaging material while retaining a residual or trace quantity of hydrogen peroxide (Ernstsson teaches removing surplus hydrogen peroxide by providing air knives as explained in col.5, lines 2-3 while hydrogen peroxide residues are left to be latter removed at an additional evaporation step as further shown in col.5, line 1) absorbed by or located adjacent to any microorganisms present on the packaging material (the specification only teaches of microorganisms without providing any significance and one of ordinary skill in the art would readily recognize that Ernstsson sterilizes the web material, because the surfaces of the material includes microorganisms that absorb the residual hydrogen peroxide left after the step of applying the air knives); irradiating the packaging material with UV light (col.3, lines 65-66 and figure 3:11) having an undisclosed wavelength; and wherein the packaging material is advanced continuously and at the same rate through an apparatus sequentially applying a hydrogen peroxide solution, removing a substantial amount of the hydrogen peroxide, and thereafter irradiating the packaging material (figure 3: 27, 28, 30, 11, 46, 49 and 48). Ernstsson is silent with regard to teaching irradiating with a UV light having a wavelength between about 200nm and 320nm. Sizer irradiates the exterior surfaces of packaging material with KrCl excimer lamp (col.3, lines 4-6 and lines 8-9) at a wavelength of 222 nm (col.7, lines 36-38) in order to provide a uniform sterilization of the material (col.4, lines 9-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method in Ernstsson with the KrCl excimer UV lamp because

KrCl excimer UV lamps provide uniform sterilization of the material as shown by Sizer (col.4, lines 9-10).

Regarding claims 2-3 and 24, Ernstsson teaches applying hydrogen peroxide to the packaging sheet material (col.4, lines 60-63 and figure 3:28 and 29) by passing the material through a bath of hydrogen peroxide solution, but is silent to disclosing values for its concentration in the solution. Sizer irradiates the exterior surfaces of packaging material with KrCl excimer lamp (col.3, lines 4-6 and lines 8-9) at a wavelength of 222 nm (col.7, lines 36-38) in combination with hydrogen peroxide solution having a concentration range between 1% and 55%, because at such a range a synergistic effect between UV light and the sterilant is obtained (col.4, lines 3-7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method in Ernstsson with the hydrogen peroxide concentration values, because at such a range a synergistic effect between UV light and the sterilant is obtained as explained by Sizer (col.4, lines 3-7).

11. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ernstsson et al (U.S.P.N. 3,884,012) in view of in view of Sizer et al (U.S.P.N. 5,843,374) as applied to claim 21 and further in view of Clark et al (U.S.P.N. 5,925,885).

Ernstsson is silent regarding the type of the UV light source provided and Sizer teaches that besides irradiating with excimer UV lamps other types of UV lamps fall within the scope of his teachings. However, Ernstsson and Sizer do not specifically teach using polychromatic UV lamps. Clark irradiates packages with polychromatic UV light (col.1, lines 17-20), because such a source of UV light deactivates microorganisms on the outer surfaces of packages or within the packages (col.1, lines 18-20). Therefore, it would have been obvious to one of ordinary skill in

the art at the time the invention was made to provide the method in Ernstsson with polychromatic UV light, because such a source of UV light deactivates microorganisms on the outer surfaces of packages or within the packages as shown by Clark (col.1, lines 18-20).

12. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ernstsson et al (U.S.P.N. 3,884,012) in view of Sizer et al (U.S.P.N. 5,843,374).

Ernstsson teaches a method for rendering any microorganisms present on the surface of packaging sheet material non-viable (col.1, lines 7-8), the method including, in the following order: advancing continuously (figure 3:27, 46, 48, 49 and 40) the sheet material through a bath (col.4, lines 60-63 and figure 3:28 and 29) of liquid hydrogen peroxide having an un disclosed concentration; blowing air (col.5, lines 2-3 and figure 3:30) against a surface of the sheet material, the air having undisclosed temperature, for removing hydrogen peroxide from the surface of the sheet material while retaining a residual or trace quantity of hydrogen peroxide (Ernstsson teaches removing surplus hydrogen peroxide by providing air knives as explained in col.5, lines 2-3 while hydrogen peroxide residues are left to be latter removed at an additional evaporation step as further shown in col.5, line 1) absorbed by or located adjacent to any microorganisms present on the packaging material (the specification only teaches of microorganisms without providing any significance and one of ordinary skill in the art would readily recognize that Ernstsson sterilizes the web material, because the surfaces of the material includes microorganisms that absorb the residual hydrogen peroxide left after the step of applying the air knives); and directing UV light (col.3, lines 65-66 and figure 3:11) onto the surface of the sheet material containing the hydrogen peroxide absorbed by the microorganisms (the specification only teaches of microorganisms without providing any significance and one of

ordinary skill in the art would readily recognize that Ernstsson sterilizes the web material, because the surfaces of the material includes microorganisms that absorb the residual hydrogen peroxide left after the step of applying the air knives), whereby the synergy between hydrogen peroxide and the UV light kills the microorganisms (see MPEP 2112). Ernstsson is silent with regard to disclosing the concentration of hydrogen peroxide and to also disclosing a temperature value for the air. Sizer irradiates the exterior surfaces of packaging material with KrCl excimer lamp (col.3, lines 4-6 and lines 8-9) at a wavelength of 222 nm (col.7, lines 36-38) in combination with hydrogen peroxide solution having a concentration range between 1% and 55%, because at such a range a synergistic effect between UV light and the sterilant is obtained (col.4, lines 3-7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method in Ernstsson with the hydrogen peroxide concentration values, because at such a range a synergistic effect between UV light and the sterilant is obtained as explained by Sizer (col.4, lines 3-7).

Sizer is silent with regard to heating the air to a temperature from 80 degrees Centigrade to 150 degrees Centigrade. DiGeronimo sterilizes packaging material (col.1, lines 8-10) by immersing the material in a 30% hydrogen peroxide solution, followed by a hot air application step where the air is heated to a temperature from 150 degrees Centigrade to 155 degrees Centigrade (col.3, lines 11-15), because combining hydrogen peroxide with heat results in a greater log reduction in viable cells (col.4, lines 30-33). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method in Ernstsson with the heated air, because combining hydrogen peroxide with heat results in a greater log reduction in viable cells as explained by DiGeronimo (col.4, lines 30-33).

Response to Arguments

13. Applicant's arguments with respect to claims 2-6, 15, 17-18 and 21-32 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MONZER R. CHORBAJI whose telephone number is (571) 272-1271. The examiner can normally be reached on M-F 9:00-5:30.

15. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, GLADYS J. CORCORAN can be reached on (571) 272-1214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MRC

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SUPERVISORY PATENT EXAMINER